Making Household Fabrics FLAME RESISTANT

LEAFLET NO. 454
U.S. DEPARTMENT OF AGRICULTURE

Many home fires that cause crippling burns and loss of life and property start when clothing and other fabrics are accidentally ignited. This hazard is reduced when fabrics are treated to make them flame resistant.

No amount of flame-resistance treatment can prevent fires caused by improper use of matches or flammable liquids. However, flame-resistance treatment lessens the danger that occurs, for example, when children get too close to an open fireplace, or when a curtain comes in contact with a flame.

DIPPING

You can make curtains, draperies, and similar articles flame resistant by dipping them into the solution, then wringing. Dry by any convenient means.

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Fabrics that commonly catch fire in the home include—

- Aprons
- Bathrobes
- Batting
- Children's clothing, especially night clothes
- Cloth toys
- Curtains and draperies
- Decorative streamers
- Ironing-board covers
- Potholders
- Rugs
- Upholstery padding

Any fabric placed near a stove or fireplace

You can make these and other fabrics flame resistant by applying the solutions described.

SPRAYING

Spray solutions on carpets, loose cotton, and upholstery padding until thoroughly wet. Use a vacuum-cleaner spraying attachment or other sprayer.

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FACTS ABOUT FLAME RETARDANTS

Consider these facts before treating your materials:

- Flame-resistance treatment is not *fireproofing*. Even if treated, all fabrics except those made of asbestos or glass will char and be destroyed when exposed to fire.
- Treated materials will char and possibly glow. However, they will not burst into flame and spread the fire to surrounding objects.
- Glow occurs when charred area remains red hot after igniting flame is gone. Glow is dangerous. Some flame retardants shorten its duration and keep it from spreading.

SPRINKLING

Sprinkle solutions on clothing and other items that require ironing. Thoroughly wet the fabric with the solution.

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- Flame-retardant solutions described here are suitable only for materials kept under cover. The protective chemicals wash out when materials are exposed to weather.
- Laundering removes the chemicals. Articles should be treated again after each laundering.
- Solutions are not effective on synthetic fibers such as nylon, orlon, and acetate. Rayon, however, can be made flame resistant.
- Solutions will shrink or discolor materials that would be so affected by water. Test a small area of the material before treating it if material is not known to be washable.

APPLYING SOLUTIONS

You can apply flame-retardant solutions in three ways—by dipping, spraying, or sprinkling.

Resin-treated fabrics, and some unused fabrics, resist wetting. To overcome this, add about 1 teaspoonful of a wetting agent (any synthetic detergent) to each gallon of solution.

Materials must be dry before being treated. Completely wet them with the solution.

Do not apply solutions to materials that water will injure.

• Flame-retardant solutions usually cause a slight stiffening of the treated fabric, which becomes somewhat heavier. However, these solutions cause no appreciable change in the feel or color of the material. Treated garments will not injure or irritate the skin.

• Treatment may lessen the fiber strength of materials when they are stored for long periods. SOLUTION A, described in the following section, has least effect on fiber strength.

PREPARING SOLUTIONS

Four solutions are described. Select the one best suited to the material you wish to treat.

Chemicals can be purchased at most drug or grocery stores. Commercial grades give as good results as more expensive pharmaceutical grades.

Solution A

Borax	**7 ounces**
Boric acid	**3 ounces**
Water (hot)	**2 quarts**

Dissolve boric acid by making a paste with a small quantity of water. Add this and the borax to water. Stir until the solution is clear.

Warm the solution if it becomes cloudy or jellylike from standing.

Fabrics treated with SOLUTION A do not flame when exposed to fire. Glow lasts about 30 seconds.

This solution does not appreciably weaken fabric, even after treated fabric has been stored 6 or 8 months.

Materials treated with it may lose their flame resistance in time. Re-treat them within a year.

Use SOLUTION A for garments and other household fabrics, except those made of rayon or resin-treated cotton—sometimes called crushproof, wrinkleproof, or wash-and-wear. For rayon or resin-treated fabrics, use SOLUTION C.

Solution B

Borax . . . . . 6 ounces
Diammonium phosphate . . . . 6 ounces
Water . . . . . 2 quarts

Add chemicals to water. Stir until solution is clear.

SOLUTION B is less flame retardant than SOLUTION A, but is more glow retardant. It slightly reduces the strength of treated fabrics if not washed out within 3 or 4 months.

Solution C

Diammonium phosphate . . . . 12 ounces
Water . . . . . 2 quarts

Add chemical to water. Stir until solution is clear.

Use SOLUTION C for resin-treated cotton or rayon fabrics.

SOLUTION C is less flame retardant than SOLUTION A, but has good glow-retardant properties.

It has more tendency than SOLUTION A or B to weaken a treated fabric if the fabric is stored for long periods.

Solution D

Ammonium sulfate . 13 ounces
Water . . . . . 2 quarts
Household ammonia . . Small amount

Add ammonium sulfate to water. Stir until solution is clear. Then add enough household ammonia to give a faint odor.

If fertilizer-grade ammonium sulfate is used, the solution may not be clear. Strain through a cloth before using.

This solution has good glow-retardant properties. It is less flame retardant than SOLUTION A.

It slightly reduces the strength of treated fabrics.

IRONING

You can iron treated fabrics and articles of clothing, whether they were dipped, sprayed, or sprinkled.

After applying the solution, allow the fabrics to nearly dry before ironing. Do not redampen with water.

Use a moderately hot iron. If the fabric is wet, or the iron is too hot, the solution will stick to the iron. If solution sticks, wipe the iron with a damp cloth.

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